

## Rectovaginal fistula with anal atresia in 5 dogs

Sheila C. Rahal, Cristiane S. Vicente, Ana C. Mortari, Maria J. Mamprim, Evelyn H.G. Caporalli

**Abstract** — Five dogs with rectovaginal fistula and atresia ani that had been treated by surgical correction of the malformations were studied retrospectively. Ages at presentation varied from 1 to 3 months and weight from 350 g to 7.5 kg. The histories included voiding of feces through the vulva, with or without tenesmus, usually observed after weaning. Atresia ani, presence of feces in the vaginal canal, abdominal distention, and discomfort on abdominal palpation were observed during clinical examination. Also, 3 dogs had partial tail agenesis. In all dogs, the rectovaginal fistula was isolated and transected, the vulvar and rectal defects were closed separately, and the atresia ani was repaired. Normal defecation was restored, but 1 dog had fecal incontinence that subsequently resolved. One dog died 2.5 months postoperatively, and follow-up was done on the others for periods ranging from 1.6 year to 7.7 years. Surgical correction in dogs with rectovaginal fistula and atresia ani may result in a favorable outcome, if it is done early.

**Résumé** — **Fistule rectovaginale avec atrésie anale chez cinq chiens.** Une étude rétrospective a été réalisée sur cinq chiens avec fistule rectovaginale et atrétocysie ayant été traités par correction chirurgicale. L'âge à la présentation variait de 1 à 3 mois et le poids de 350 g à 7,5 kg. Les histoires comprenaient de l'élimination de fèces par la vulve, avec ou sans ténisme, habituellement après le sevrage. L'atrétocysie, la présence de fèces dans le canal vaginal, la distension abdominale et l'inconfort à la palpation abdominale ont été observés lors des examens cliniques. De plus, 3 chiens avaient une agénésie partielle de la queue. Chez tous les chiens, la fistule rectovaginale a été isolée et sectionnée, les anomalies vulvaires et rectales ont été fermées séparément et l'imperforation de l'anus réparée. La défécation normale s'est établie mais 1 chien a souffert d'une incontinence fécale qui s'est résolue par la suite. Un chien est décédé 2,5 mois après l'intervention et les suivis ont été faits chez les autres chiens pour une période variant de 1,6 à 7,7 années. La correction chirurgicale chez les chiens présentant une fistule rectovaginale et une imperforation de l'anus peut mener à un résultat favorable lorsqu'elle est effectuée précocement.

(Traduit par Docteur André Blouin)

Can Vet J 2007;48:827–830

### Introduction

**C**ongenital rectovaginal fistula is characterized by the communication between the dorsal wall of the vagina and the ventral portion of the rectum, so that the vulva functions as a common opening to the urogenital and gastrointestinal tracts (1,2). Usually, the abnormality is associated with type II atresia ani, in which the rectum ends as a blind pouch immediately cranial to the imperforated anus (1–3). The prevalence has not been totally determined, but apparently it is more common in dogs than cats (1).

Departments of Veterinary Surgery and Anesthesiology (Rahal, Vicente, Mortari, Caporalli) and Animal Reproduction and Radiology (Mamprim), School of Veterinary Medicine and Animal Science, University of São Paulo State (UNESP) Botucatu, PO Box 560, Rubião Júnior s/n, Botucatu (SP), Brazil 18618-000.

Address all correspondence and reprint requests to Dr. Rahal; e-mail: sheilacr@fmvz.unesp.br

Clinical signs include passage of feces through the vulva, vulvar irritation, tenesmus, cystitis, and megacolon, among others (1,4–7). However, some of these signs will not be evident while the dog is on liquid diet (1,2,6). Diagnosis is based on history, clinical signs, and physical examination (2). Radiographic examination with contrast medium infused through the vagina or fistula may be useful for determining the position of the fistula and terminal rectum (1,2,4,6).

Two surgical techniques are frequently used in the treatment of rectovaginal fistula and atresia ani: in one the fistula is isolated, transected, and the rectum and vulvar defects are closed separately, followed by reconstruction of the anus (1,2,8,9); in the other, the rectum is transected cranial to the fistulous opening, the affected segment is removed, and the terminal part of the rectum is sutured to the anus (1,4,10). Closing the rectovaginal fistula by numerous purse-string sutures along its length (6) and the use of plastic adhesive in the treatment of rectovaginal fistula induced experimentally (11) have also been reported. Recently, 2 dogs were treated successfully by a technique that

**Table 1.** Breed, age, weight, and last evaluation after surgical procedure of 5 dogs with rectovaginal fistula and atresia ani

Dog (#)	Breed	Age	Weight	Last evaluation after surgery
1	Poodle	2 months	550 g	7.7 years
2	Poodle	23 days	350 g	2 years
3	Poodle	1 month and 10 days	400 g	1.6 year/death as a result of a collision with an automobile
4	crossbred	1 month	1.7 kg	3 years
5	Brazilian mastiff	3 months	7.5 kg	2.5 months/death due to unknown cause

preserves the fistula and uses it in the surgical reconstruction of the anal canal and anus (7).

Among the reported complications following surgery, fecal incontinence is one of the most important; it may be associated with lack of function, possible absence of the external anal sphincter, or nerve damage during the surgical procedure (1,2,7,10). Other possible complications include obstipation and tenesmus, constipation, anal gland odor, edema of the anal area, rectal prolapse, urinary incontinence, anal stenosis, and wound dehiscence (3,4,6,7,9,10).

Since there are few reports about congenital anorectal abnormalities, the aim of this article was to evaluate, by retrospective study, the condition of dogs with rectovaginal fistula and atresia ani that were treated by a surgical procedure.

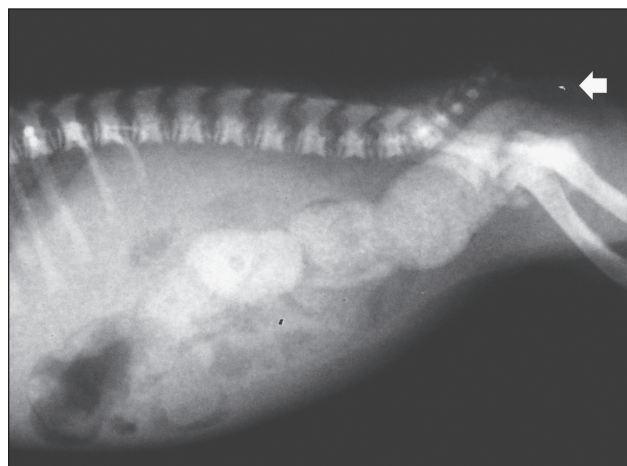
## Materials and methods

Five dogs with rectovaginal fistula and atresia ani were presented to the Veterinary Hospital of the School of Veterinary Medicine and Animal Science — Unesp Botucatu. The data regarding breed, age, body weight, and clinical signs were collected. The time when the abnormality was observed by the owner, and whether the littermates also presented with the anomaly or other congenital defects were also recorded. In addition, the findings on physical examination, the type of surgical technique and anesthetic procedure used, the postoperative care, the clinical outcome after surgery, and the follow-up data were documented.

## Results

The age at the time of presentation varied from 1 to 3 mo and body weight from 350 g to 7.5 kg (Table 1). The history included defecation from the vulva, with or without tenesmus, usually observed after weaning. In case #3 (Table 1), the owner observed atresia ani a few days after the birth, because the mother frequently rejected the puppy. According to the owners, in all cases, the littermates were normal.

Atresia ani, presence of feces in the vaginal canal, abdominal distention, and discomfort on abdominal palpation were observed in all dogs during the clinical examination. Also, 3 dogs (#2, #3, #4) had partial tail agenesis. All dogs were in a good physical condition, except for dog #5, which had anemia and neutrophilic leukocytosis, fever, and clinical signs of pneumonia, with presence of crackling sounds on lung auscultation. Plain abdominal radiography in dogs #1 and #3 showed megacolon,

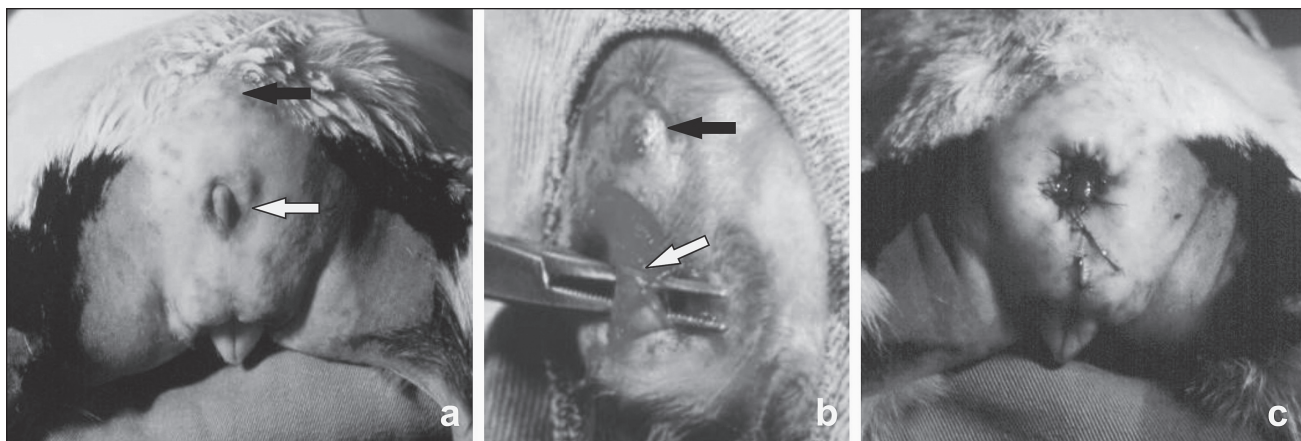


**Figure 1.** Lateral plain abdominal radiograph of an approximately 1-month-old poodle (dog #3) before surgery. Note the abdominal distention, megacolon secondary to fecal retention, and radiopaque signal in the anal area (white arrow).

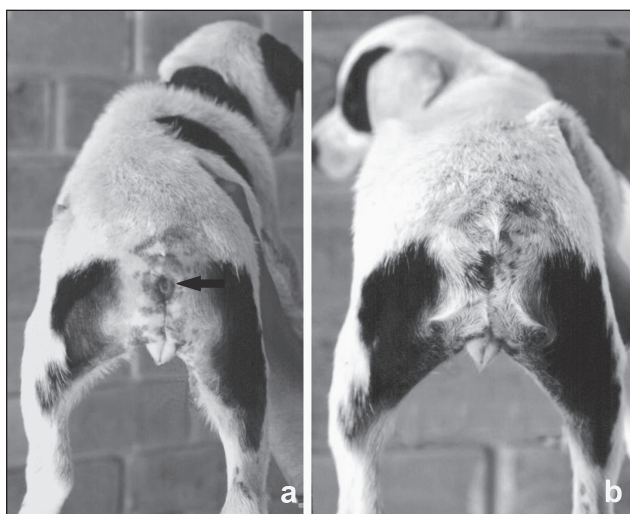
secondary to fecal retention (Figure 1). The owners did not allow radiographic examinations in the other dogs.

The surgical procedures were performed under general anesthesia, using halothane (Halothano; Cristália, Itapira, Brazil) or isoflurane (Isoforine; Cristália, Itapira, Brazil), except in case #5, in which epidural anesthesia was also used to reduce the quantity of depressant inhalation agent required, because of the dog's poor physical condition. The dogs were placed in ventral recumbency with the tail, if present, held out of the way (Figure 2a). The perineal area was clipped, prepared, and draped for surgery. A cruciate incision was made at the site corresponding to the anal orifice. The flaps were trimmed back and a vertical median perineal incision was made to the dorsal commissure of the vulva. The rectovaginal fistula was isolated, transected, and the openings in the vagina and rectum were closed separately (Figure 2b). The vertical median perineal incision was closed and the blind-ended rectum was isolated, drawn to the anal orifice, opened and sutured to the surrounding tissues and peripheral skin by using simple interrupted sutures (Figure 2c) with size 4-0 or 5-0 poliglactin 910 (Vicryl; Ethicon, São Paulo, Brazil) and monofilament nylon (Nylon; Shalon, Goiás, Brazil).

Buprenorphine hydrochloride (Temgesic; Schering Plough, Rio de Janeiro, Brazil), 15 µg/kg bodyweight (BW), IM, was administered before and after the surgical procedure as required. Ampicillin (Ampicilina; Novartis, São Paulo, Brazil), 22 mg/kg BW, IV, was



**Figure 2.** A 1-month-old female crossbred dog (number #4) with rectovaginal fistula and atresia ani. (a) Appearance before surgery showing partial tail agenesis (black arrow) and atresia ani (white arrow). (b) Intraoperative photograph showing the blind-ended rectum (black arrow) and isolated rectovaginal fistula (white arrow). (c) Appearance immediately postoperative after correction of rectovaginal fistula and atresia ani.



**Figure 3.** Dog #4 after correction of rectovaginal fistula and atresia ani. (a) Note moderate rectal prolapse at 10 days after surgery (arrow) and (b) normal area 1 month postoperatively.

administered before anesthesia was induced; postoperatively, 22 mg/kg, PO, q8h, was administered for 5–7 d. Dogs #2, #4, and #5 received cisapride (Prepulsid; Janssen-Cilag, São Paulo, Brazil), 0.1 mg/kg BW, PO, q12h for 10–20 d, postoperatively. Isotonic saline solution was used to clean the wound, and skin sutures were removed 10 d after surgery.

Defecation through the anus was reestablished in all dogs after surgery, and wound dehiscence was not observed. Moderate rectal prolapse was observed in dog #4 at Day 10 after surgery, but it was not visible 1 mo postoperatively (Figures 3a and 3b). Dog #1 showed signs of fecal incontinence for approximately 1 y after surgery, but fecal control was recovered after this period. Normal passage of feces was observed in the other dogs at all times during the follow-up period (Table 1).

## Discussion

Rectovaginal fistula is considered an embryologic failure of the urorectal septum to separate the cloaca into urethrovesical and rectal segments (12). Although there are references of no breed

predisposition in dogs presenting this disease (4,6–8), 3 dogs in our study were poodles. In a retrospective study of dogs with atresia ani, an increased prevalence in several breeds, including poodles and Boston terriers was observed (9).

One third of human patients with anorectal abnormalities may have other anomalies (1). In the present study, 3 dogs had partial tail agenesis; this has also been observed in a Doberman with the same disease (6). In a report of 3 kittens with rectovaginal fistula and atresia ani, 2 were of Manx breeding and had sacrocaudal dysgenesis, and the 3rd kitten had hydrocephalus (10).

The abnormality is observed in most dogs after weaning (1–3,6) as was the case in this study, with the exception of dog #3, whose lesion was detected a few days after birth due to its rejection by its mother. Before weaning, it may be difficult to detect the presence of feces passing through the vulva, because the dam frequently cleans the puppies (8,10). In addition, the clinical signs tend to intensify after changing from maternal feeding to a solid diet, because the liquid diet permits the passage of liquid feces and the solid diet induces obstipation and tenesmus (2,6).

Since the clinical signs and physical examination findings were sufficient to establish the diagnosis, radiographic studies were not necessary to confirm the disease. However, radiographs are considered important to determine the position of the fistula and to differentiate the 4 types of congenital atresia ani: Type I — anal stenosis; Type II — the rectum ends as a blind pouch immediately cranial to the imperforate anus (persistent anal membrane); Type III — similar to Type II, but the rectal pouch is located farther cranial; Type IV — terminal portion of the rectum and the anus are normal, but there is rectal atresia inside the pelvic canal (rectal agenesis) (1,9,12). The Type II atresia ani, the type most commonly associated with a rectovaginal fistula, was confirmed during the surgical procedure in all dogs in the present report (1). In this series of cases, only 2 owners allowed the radiographs to be taken.

Surgery should be performed as soon as possible to avoid deterioration of the physical condition, irreversible megacolon, and possible ascending urinary tract infection (8,12).

Reconstruction of the rectum and vagina without resection of the terminal portion of the rectum with the fistula was used in this case series, because the method is simple, less traumatic, and minimizes the probability of damaging the external anal sphincter muscle and its innervation. A possible complication after reconstruction for atresia anal is rectal stenosis (1), but the dogs did not show clinical signs suggestive of this process.

Secondary megacolon and chronic dilation should be considered especially in chronic cases, since feces can accumulate in the colon due to the solid diet (2,12). The duration of fecal retention and degree of colonic dilation may be used as a prognostic criterion (5,8). Also, depending on the duration and extension of the lesion, it may be necessary to use medical treatments for long periods, intermittent manual evacuation, or even subtotal colectomy (8,13). Although the dogs in this study had an enlarged abdomen, megacolon was verified only in dogs #1 and #3, which were submitted to plain abdominal radiography. After surgery, all dogs defecated normally. This suggests that if the secondary megacolon was present, it was reversed. Cisapride was administered in dogs #2, #4, and #5 to stimulate defecation considering the duration of lesion or the clinical signs, such as severe abdominal distention.

Among the reported postsurgical complications, fecal incontinence was the most important one observed in our study. If rectal dysfunction is a consequence of the surgical procedure, the problem may resolve (13), as observed in dog #1. Improvement of fecal incontinence occurs, in general, several weeks after surgery (7,8), but in our study, it took almost a year, according to the owner, similarly to a dog with Type III atresia ani and rectovaginal fistula, in which improvement of fecal control occurred 1 y after the surgery (9). Application of a semitendinosus muscle flap was reported to be an option to produce a voluntary pressure zone around the anus in a dog with imperforate anus and rectovaginal fistula (14).

The moderate rectal prolapse observed in dog #4 might have been associated with surgical trauma, since it was no longer visible 1 mo postoperatively. Another report mentioned mild rectal prolapse in a dog 6 mo after correction surgery of atresia

ani and rectovaginal fistula (7). The cause of the dog 5's death at 2.5 mo postoperatively could not be determined, because the owner did not authorize the necropsy; but this dog was in poor physical condition before surgery, probably due to the chronicity of lesion (3 mo). Also, the anemia and neutrophilic leukocytosis observed in its hemogram probably were associated, respectively, with poor diet and clinical signs of pneumonia. Surgical correction in dogs with rectovaginal fistula and atresia ani may result in a favorable outcome if the procedures are done early. CVJ

## References

1. Aronson L. Rectum and anus. In: Slatter DH, ed. *Textbook of Small Animal Surgery*, 3rd ed. Philadelphia: WB Saunders, 2003:682–708.
2. Wykes PM, Olson PN. Vagina, vestibule, and vulva. In: Slatter DH, ed. *Textbook of Small Animal Surgery*, 3rd ed. Philadelphia: WB Saunders, 2003:1502–1510.
3. Burrows CF, Sherding RG. Constipation and dyschezia. In: Anderson NV, ed. *Veterinary Gastroenterology*, 2nd ed. Philadelphia: WB Saunders, 1992:484–503.
4. Rawlings CA, Capps WF Jr. Rectovaginal fistula and imperforate anus in a dog. *J Am Vet Med Assoc* 1971;159:320–326.
5. Amand WB. Nonneurogenic disorders of the anus and rectum. *Vet Clin North Am Small Anim Pract* 1974;4:535–550.
6. Louw GJ, van Schouwenburg SJ. The surgical repair of atresia ani in a Doberman bitch. *J S Afr Vet Assoc* 1982;53:119–120.
7. Mahler S, Williams G. Preservation of the fistula for reconstruction of the anal canal and the anus in atresia and rectovestibular fistula in 2 dogs. *Vet Surg* 2005;34:148–152.
8. Prassinis NN, Papazoglou LG, Adamama-Moraitou KK, Galatos AD, Gouletsou P, Rallis TS. Congenital anorectal abnormalities in six dogs. *Vet Rec* 2003;153:81–85.
9. Vianna ML, Tobias KM. Atresia ani in the dog: A retrospective study. *J Am Anim Hosp Assoc* 2005;41:317–322.
10. Suess RP Jr, Martin RA, Moon ML, Dallman MJ. Rectovaginal fistula with atresia ani in three kittens. *Cornell Vet* 1992;82:141–153.
11. Sheena KS, Heale JE Jr, Gallager HS, McBride CM. Nonsuture repair of pelvic fistulae. *Tex Med* 1970;66:62–67.
12. Marretta SM, Matthiesen DT. Problems associated with the surgical treatment of diseases involving the perineal region. *Probl Vet Med* 1989;1:215–242.
13. DeNovo RC, Bright RM. Recto-anal disease. In: Ettinger SJ, Feldman EC, eds. *Textbook of Veterinary Internal Medicine*, 5th ed. Philadelphia: WB Saunders, 2000:1257–1270.
14. Chambers JN, Rawlings CA. Applications of a semitendinosus muscle flap in two dogs. *J Am Vet Med Assoc* 1991;199:84–86.